$5.00

EQUIPMENT DEVELOPMENT MANUAL

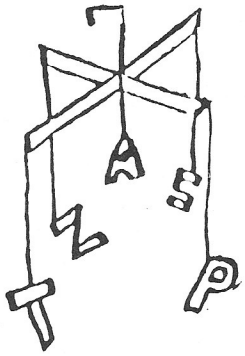
FOR ACTIVE STIMULATION ACTIVITIES

by

Stephen P. Accrino

TRUDEAU-ZAMBARANO ACTIVE STIMULATION PROGRAM
WARWICK, RHODE ISLAND

A FIRST CHANCE NETWORK PROJECT
OE GRANT #G007 062 070



INTRODUCTION

The equipment described in this manual has been designed for, built and used with multi-handicapped children in their homes, classrooms and on institutional wards. Devices used by our children to assist in controlling their environment, as well as reinforcement devices which constitute the environment, are described in detail so that they may be reproduced. It goes without saying that individual children have individual needs, however, and that the equipment described should be modified and adapted to fit the needs of individual children.

Although construction of these devices may seem to be a formidable task, most are, in fact, quite easy to construct and seen in the photographs the finished products are quite simple in their features. It should be noted that changes and substitutions may be made in materials, measurements, and even the basic design of the equipment to suit the needs of the child as well as the budget.

Finally, the manipulanda described were designed so that the children who used them could do so with a minimum of effort. Once a child can make a specific movement, this behavior can be incorporated into an educational or leisure time activity which the child can perform independently. Thus, a basic feature of active stimulation programming is made possible: that regardless of the handicapped child's motor involvement, the environment can be arranged to allow the child to have successful and rewarding interactions with it.

Edmond S. Zuromski, Ph.D.
Project Director
Trudeau-Zambarano Active
Stimulation Program

HELPFUL TOOLS

Table or Radial Arm Saw

Drill (hand or electric)

Drill Press

Saber (jig) saw

Drill Bits - all sizes, wood and metal

Hole Cutters

Pliers

Side Cutters

Needle Nose Pliers

Various sizes of regular and Philips Screw Drivers

Electric Sander or Sand Paper (fine - medium - coarse)

Soldering Iron and Solder

Scrap Lumber

C Clamps - various sizes (i.e. 2", 3" and what is needed)

Various Screws, Bolts, Washers, Nuts (wood and metal - basic 1 x 6, 1½ x 8, 1½ x 6)

Wire

Electrical Tape

Small and large Rulers (decimal/metric)

Paint (if desired)

Nails (common and finish)

Glue (white and epoxy)

Scissors

*NOTE: Many of the switches described may be obtained at local Radio Shack and Lafayette stores. Most other materials are obtainable at local hardware stores.

SINGLE LEVER PANEL

General Description:

This apparatus consists of a 23 cm x 43.5 cm hardboard panel which is mounted on a Switchcraft #6006 "telephone" type switch. A wooden dowel, 1.6 cm diameter and 7.7 cm long is attached to the end of the switch to make it easier to operate. A large plastic Fisher Price block can be attached to the lever and, if desired, a speaker may be mounted on the panel.

T.Z.A.S.P. Curriculum Goals:

Gross motor, fine motor, sensory motor, adaptive behavior, and cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. The reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

B. The use of the panel may require a finer, more controlled movement.

C. The child's grasp should not be the result of reflexive involvement. Reflexes may be inhibited through positioning.

Materials Needed:

- 43.5 cm x 23 cm hardboard panel
- 133 cm (long) x 4 cm (wide) x 2.5 cm (thick) #2 pine (brackets)
- One Switchcraft #6006 "telephone" type switch (D.P.D.T.) (two-position type or a substitute)
- 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- 41.6 cm in diameter x 7.0 cm long dowel
- Speaker (optional)

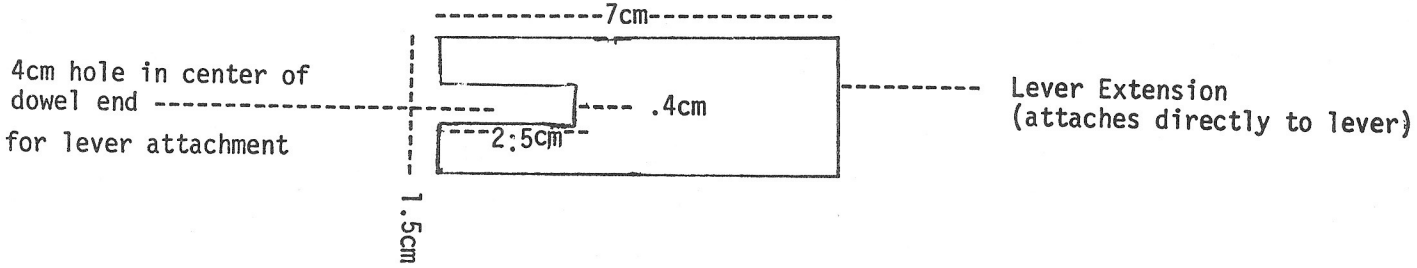
Approximate Price:

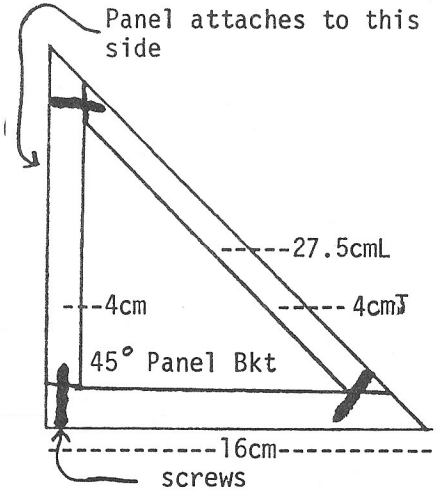
- One Switchcraft telephone switch	- $ 8.00
- Hardboard panel	- 2.00
- Hardware and wire	- 2.00
- 2/ C-Clamps (Used to secure the panel to table)	- 5.00
- Wood frame, dowels	- 3.00
*Total:	$20.00

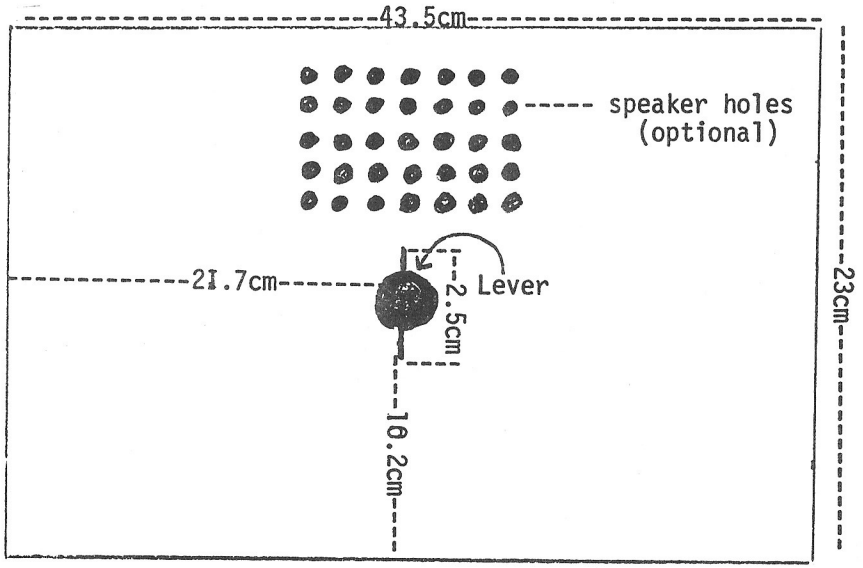
Instructions for Building the Single Lever Panel

Cut the hardboard panel to the desired size. Next, cut the slot for the Switchcraft lever exactly as shown on schematic. If a speaker is to be used, drill the holes. Next, construct the 90 degree side brackets as shown. Now construct the lever extensions exactly as described in the schematic; attach the levers to the hardboard panel, and the extensions to the levers. (Note: You must remove the black knob that comes with the lever before the extensions can be screwed on). The single push panel is now ready for wiring. (See section on wiring.)

SINGLE LEVER PANEL







DEVELOPMENTAL LEVER PANEL (D.L.P.)

General Description:

This apparatus consists of a 23 cm x 43.5 cm hardboard panel on which are mounted two Switchcraft #6006 "telephone" type switches. Wooden dowels, 1.6 cm diameter and 7.7 cm long are attached to the ends of the switches to make them easier to operate. A large plastic Fisher Price block is attached to one of the levers and, if desired, a speaker may be mounted on the panel.

T.Z.A.S.P. Curriculum Goals:

Gross motor, fine motor, sensory motor, receptive language (visual), receptive language (auditory), adaptive behavior, and cognitive.

T.Z.A.S.P. Behavioral Prerequisites:

A. The reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

B. The use of the panel may require a finer, more controlled movement.

C. The child's grasp should not be the result of reflex involvement. Reflexes may be inhibited through positioning.

Materials Needed:

- 43.5 cm x 23 cm hardboard panel
- 133 cm (long) x 4 cm (wide) x 2.0 cm (thick) #2 pine (brackets)
- 2/Switchcraft #6006 "telephone" type switches (DPDT) two-position type or a substitute
- 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- 2/1.6 cm diameter x 7.0 cm long dowel
- Speaker (optional)

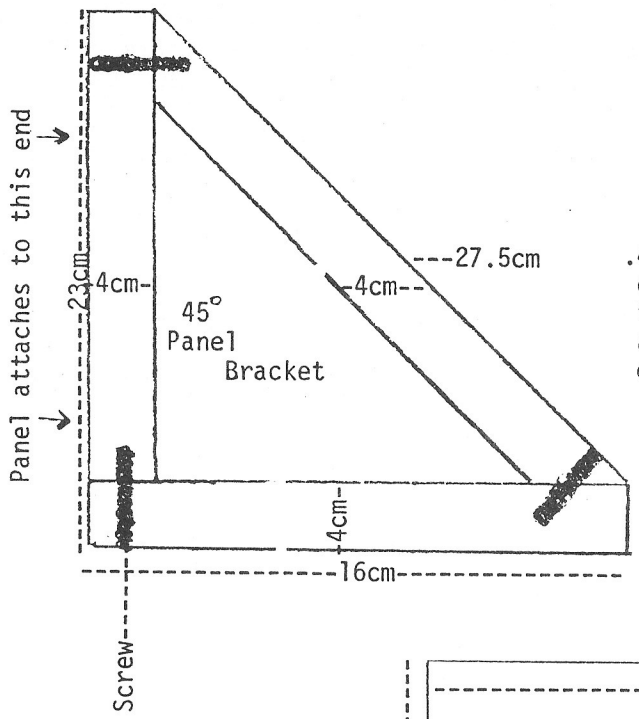
Approximate Prices:

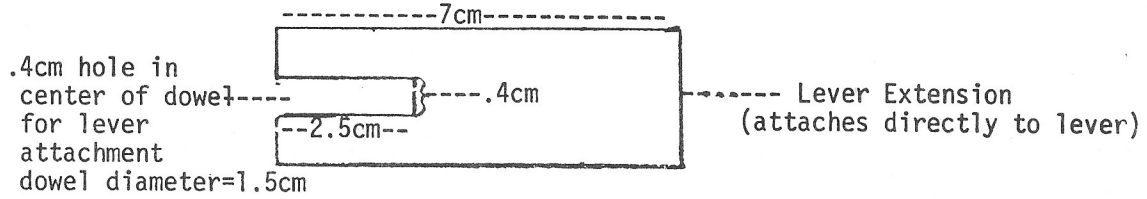
- 2/Switchcraft "telephone" switches	- $ 16.00
- Hardboard panel	- 2.00
- Hardware and wire	- 2.00
- 2/ C-Clamps (Used to secure panel to table)	- 5.00
- Wood frame, dowels	- 3.00
*Total:	$ 28.00

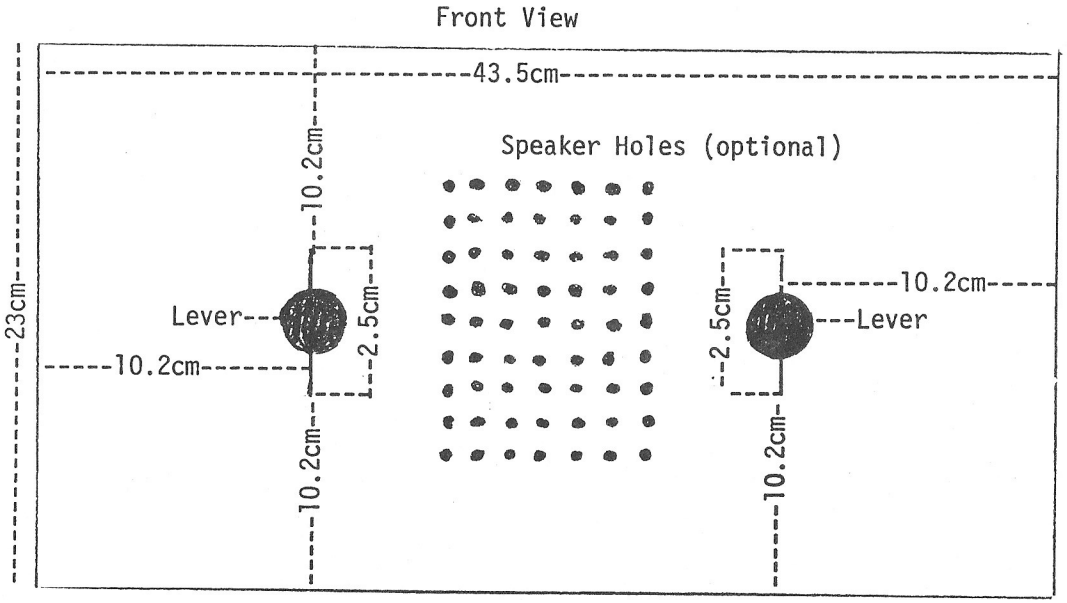
Instructions for Building the D.L.P.

Cut the hardboard panel to the pre-measured size. Next, cut the slots for the Switchcraft lever switches exactly as shown on schematic. If a speaker is to be used, drill the holes in the center of the panel. Next, construct the 90-degree side brackets as shown. Now construct the lever extensions exactly as described by the schematic; attach the levers to the hardboard panel, and extensions to the levers. (Note: you must remove the black knob that comes with the lever before the extensions can be screwed on). The D.L.P. is now ready for wiring.

DEVELOPMENTAL LEVER PANEL (D.L.P.)







SINGLE PUSH PANEL

General Description:

The apparatus consists of a 21.5 cm x 21.5 cm clear plexi-glass panel held in place by grooved wooden posts. The S.P.P. is constructed in such a way that a light touch anywhere on the plexi-glass panel will result in a switch closure. Four BZ-R88 micro switches are used to produce this ease of operation. If desired, the panel may be set up to a specific angled needed.

T.Z.A.S.P. Curriculum Goals:

Gross motor, fine motor, sensory motor, receptive language (visual), receptive language (auditory), adaptive behavior, and cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. The reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

B. The use of the panel may require a finer, more controlled movement.

C. The child's grasp should not be the result of reflex involvement. Reflexes may be inhibited through positioning.

Materials Needed:

- 92 cm (long) x 2.5 cm (thick) x 5 cm (wide) #2 pine
- 6 cm x 16 cm #2 pine (optional base)
- 16 cm x 16 cm #2 pine (optional brackets)
- 21.5 cm x 21.5 cm clear plexi-glass (1/8" thick)
- 4/BZ-R88 micro switches (SPDT)
- 1x6 and 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable

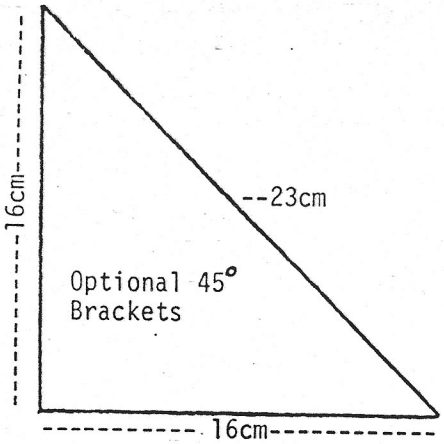
Approximate Price:

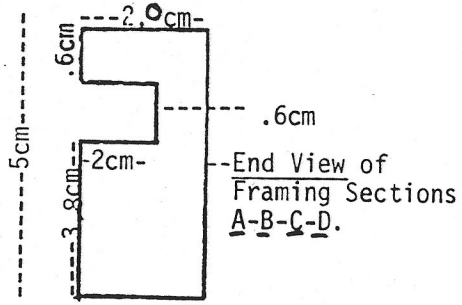
- 4/ BZ-R88 micro switches	- $ 13.40
- Plexi-glass panel	- 4.00
- Wood frame	- 3.00
- Wire and hardware	- 2.00
- 2/C-Clamps	- 5.00
*Total:	$27.40

Instructions for Building the S.P.P.

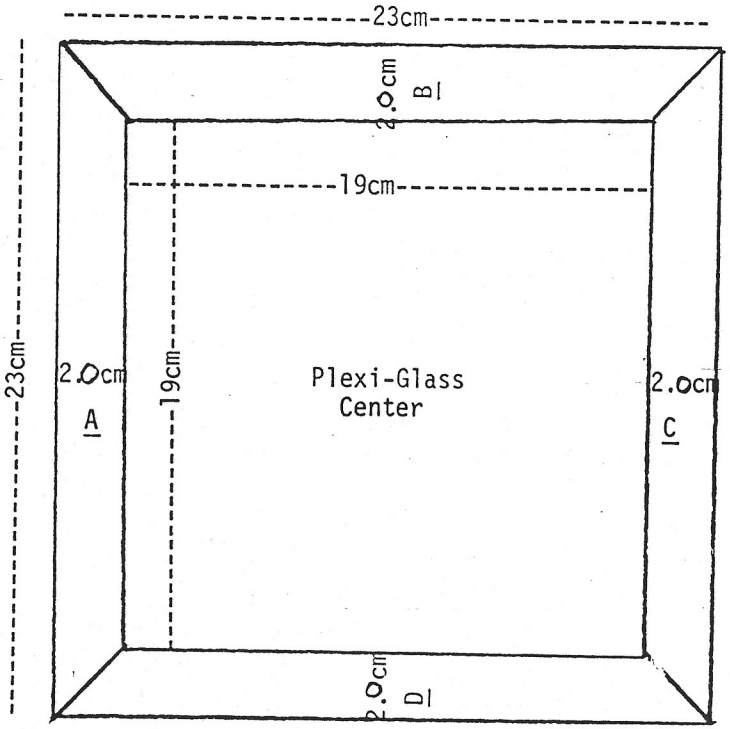
Cut the framing section (#2 pine) according to desired sizes (A-B-C-D). Next, cut out the groove in each frame section exactly as described by the schematic. Screw sections "A" and "C" to section "B". After that is done, slide the plexi-glass panel into the pre-cut grooves. (Note: The plexi-glass must move freely within the grooves and may require some sanding.) Now screw section "D" to "A" and "C" so the plexi-glass is able to move freely but not move out. The next step is to screw the micro switches (using 1x6 screws) to the center of each frame section, "A-B-C-D". (See "single frame section - side view.") Remember the switches must be open at all times when panel is not being touched. Optional items such as side brackets and a base may be added.

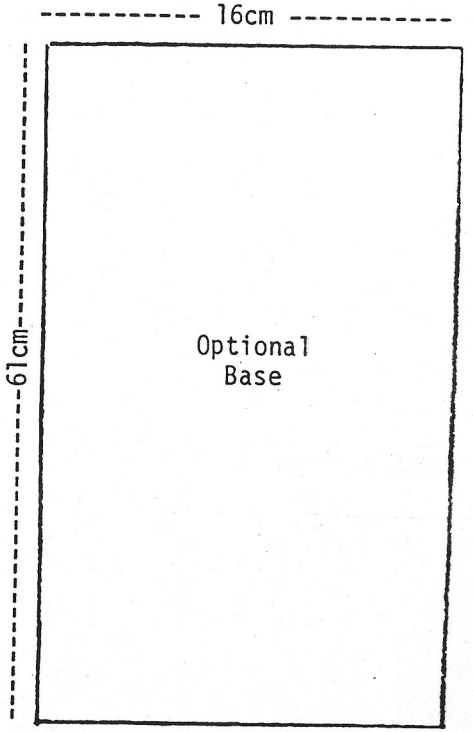
SINGLE PUSH PANEL

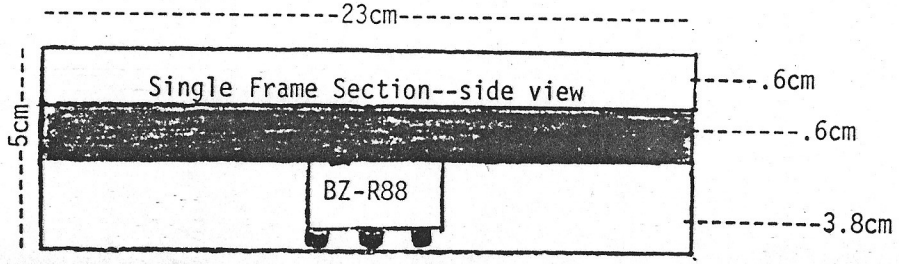




Face View of Panel







DOUBLE PUSH PANEL

General Description:

This apparatus consists of two 19 cm x 20.4 cm clear plexi-glass panels held into place by grooved wooden posts. The D.P.P. is constructed in such a way that a light touch anywhere on the plexi-glass panel will result in a switch closure. Eight BZ-R88 micro switches are used. If desired, the panel may be set up to a specific angle.

T.Z.A.S.P. Curriculum Goals:

Gross motor, fine motor, sensory motor, receptive language (visual), receptive language (auditory), adaptive behavior, and cognitive.

T.Z.A.S.P. Behavioral Prerequisites:

A. Reinforced movement should be non-reflexive, through positioning of apparatus or child.

B. Child must have the ability to bring hands to midline or behavior may be shaped toward this goal or apparatus may be operated with one hand off midline.

Materials Needed:

- 156 cm (long) x 20 cm (thick) x 5 cm (wide) #2 pine
- 16 cm x 16 cm #2 pine (optional brackets)
- 61x16 cm #2 pine (optional base)
- 2/19 cm x 20.4 cm clear plexi-glass (1/8" thick)
- 8/BZ-R88 micro switches (S.P.D.T.)
- 1x6 and 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable

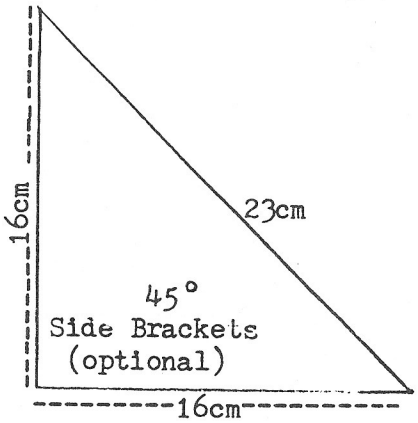
Approximate Price:

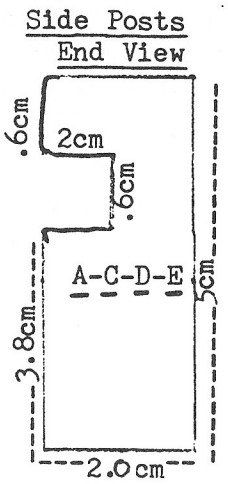
- 8/BZ-R88 micro switches	-	$26.80
- 2 plexi-glass panels	-	6.00
- Wood frame	-	3.00
- Wire and hardware	-	2.00
- 2 C-Clamps (secure panel)	-	5.00
	*Total:	$42.80

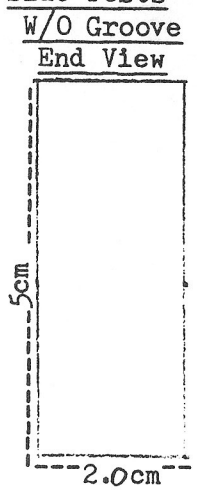
Instructions for Building the D.P.P.

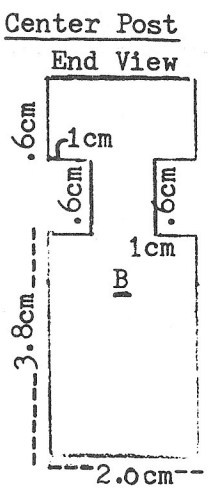
Cut the #2 pine according to desired sizes (A-B-C-D-E). Next, cut out the groove in each section (A-B-C-D-E) exactly as described in diagram. Screw sections A, B and C to section D. After that is done, slide the plexi-glass panels into the pre-cut grooves. (Note: The plexi-glass must move freely within grooves and may require some sanding to do so.) Now screw section E to A, B and C so the plexi-glass is able to move freely but not come out. Next, screw the micro switches (using 1x6 screws) to the center of each frame section "A-B-C-D". (See single frame section - side view on single push panel.) Remember switches must be open at all times when panel is not touched. Optional side brackets and a base may be added.

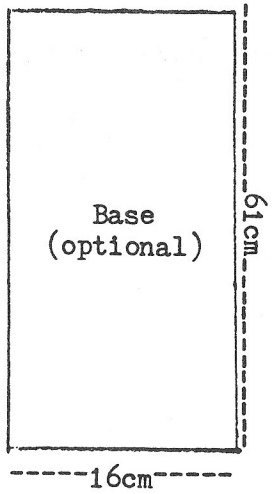
DOUBLE PUSH PANEL

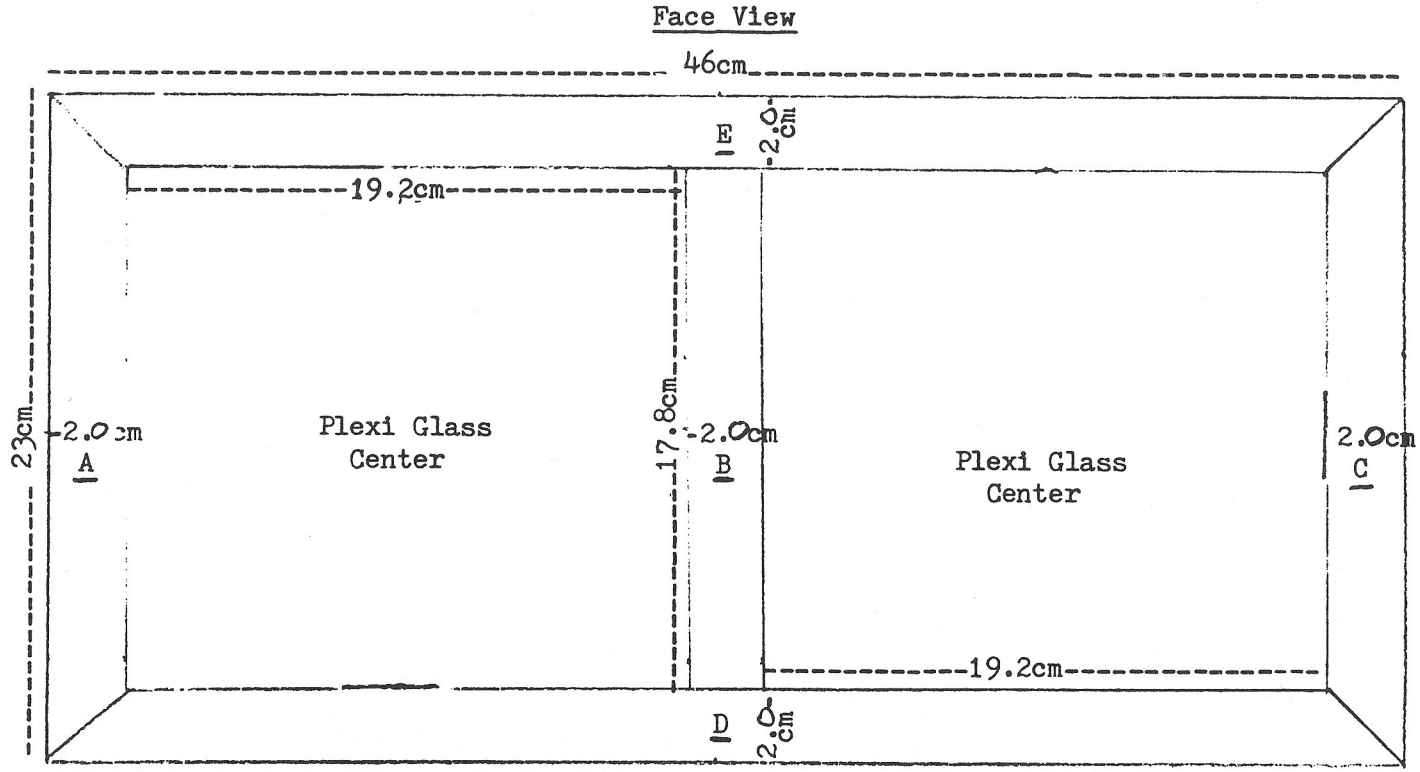












PUSH PANEL WITH LIGHTS AS THE REINFORCER

General Description:

This apparatus consists of a 23 cm x 23 cm clear plexi-glass panel held into place by grooved wooden posts. The panel is constructed in such a way that a heavy or light touch anywhere on the plexi-glass panel will result in a switch closure. Four BZ-R88 micro switches are used. Twenty alternating color lamp assemblies which change position for each switch closure serve as the reinforcer and are placed behind the plexi-glass panel. If desired, the panel may be set at desired angle.

T.Z.A.S.P. Curriculum Goals:

Gross motor, fine motor, sensory motor, receptive language (visual) receptive language (auditory), adaptive behavior, and cognitive.

T.Z.A.S.P. Behavioral Prerequisites:

A. Ability to maintain proper position at least momentarily

B. May not be appropriate to a child with a lot of extranious movement (movement will not be reinforced.)

C. Reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

Materials Needed:

- 92 cm (long) x 2.0 cm (thick) x 5.0 cm (wide) #2 pine
- 21.5 cm x 21.5 cm clear plexi-glass (1/8" thick)
- 4/BZ-R88 micro switches (S.P.D.T.)
- 23 cm x 23 cm pieced tin or cookie sheet
- 1x6 and 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- Step-down transformer (Note: from wall current down to 6 volts at 100m A.)
- Stepper relay with 21 steps (Lafayette Instrument Co.)
- 20/lamp assemblies (Radio Shack #272-326)
- 20/Sub-miniature screw lamps (Radio Shack #272-1142)
- 61 cm x 16 cm x 2.0 cm (thick) #2 pine (optional base)
- 16 cm x 16 cm x 2.0 cm (thick) #2 pine (optional brackets)

Approximate Price:

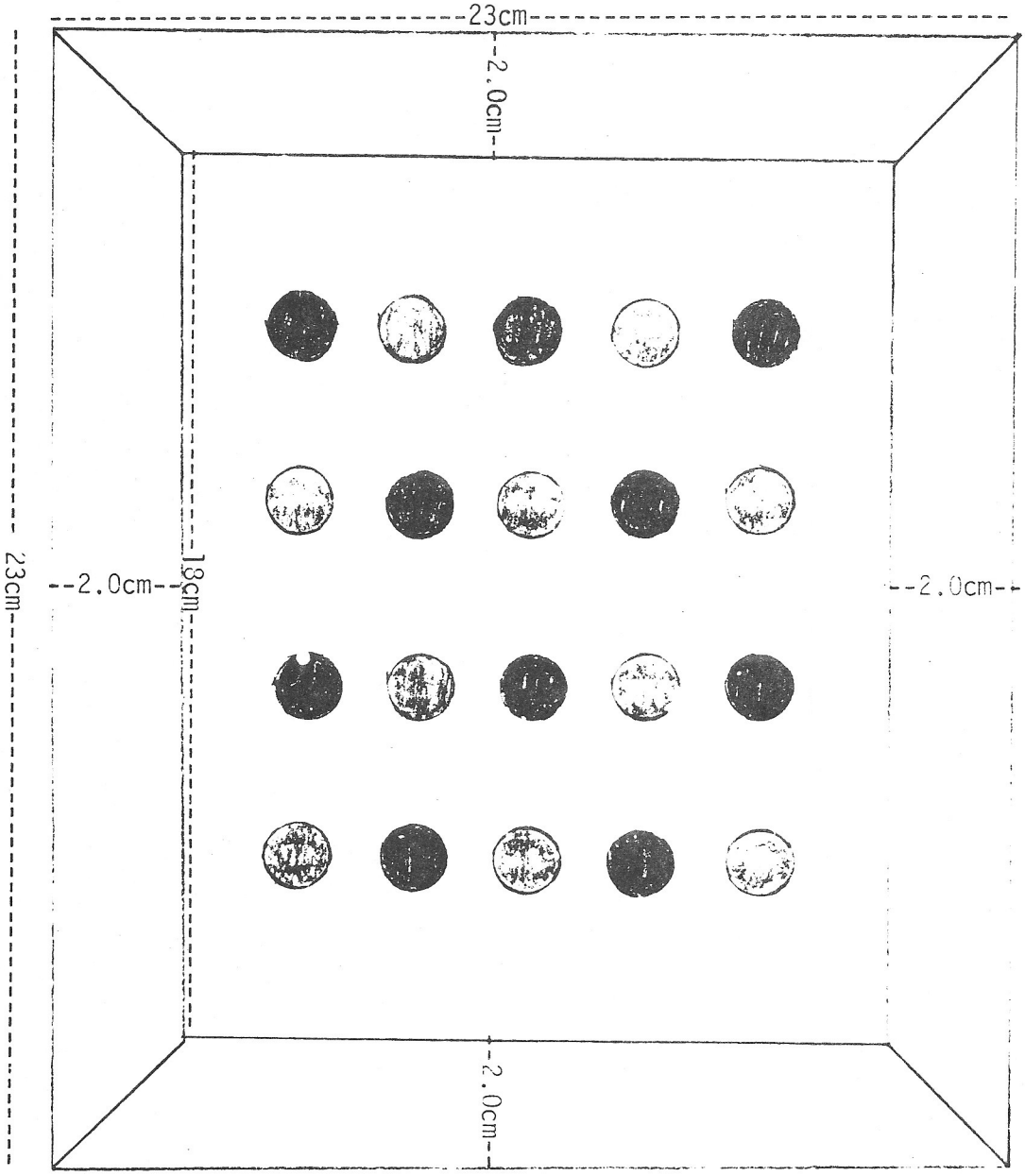
- 4/BZ-R88 micro switches	-	$ 13.40
- Plexi-glass panel	-	4.00
- Wood frame	-	3.00
- Wire and hardware	-	2.00
- 2/C-Clamps (To secure panel)	-	5.00
- Tin sheet	-	1.00
- Transformer	-	5.00
- Stepper (Surplus or Lafayette)	-	180.00 (approximately)
- 20/Lamp assemblies	-	18.90
- 20/Sub-miniature screw lamps	-	7.90
*Total:		$240.20

*Instruction for building on other side.

Instructions for Building a Barrel Switch

Pre-cut base "E" and sides "A" and "B" to desired sizes. Now take the cylinder and cut out a wood circle for each end using the inner diameter measurement (see "E"). This cut-out should fit perfectly inside the cylinder ends. Using brads, nail the cut circles to the inner ends of each side of the cylinder. Now drill a hole in the center of each end section of the cylinder ("E") so a 16d common nail can be pushed through with a little pressure. After that is done, drill a hole in each side section (A-B) so the nail can be pushed through "A" and "B" and into the center hole in "E". Make sure while drilling the side section holes that the cylinder is approximately equal to the side sections height (see face view). All the holes drilled must be at the same height and position; if not, the cylinder may not rotate correctly.

After the holes are made, take a small, thin piece of wood rounded off at one end and attach it to one of the two ends of the cylinder (see "F"). This is used for switch closures. Now screw sections "A" and "B" to base "C" as shown and then push the 16d nails through sections "A" and "B" and into the cylinder to keep it in place. Lastly, nail or glue switch "G" into place so that when the cylinder rotates, piece "F" will hit the roller on switch "G", press it down, and close it (see side viewed "A" and "B"). Switch "G" must be placed exactly so the cylinder will close the switch in either direction with very little friction occuring. Minor adjustments may be required.


23cm
2.0cm
23cm
2.0cm
18cm
2.0cm
2.0cm

Instructions for Building the S.P.P. With Lights

Build a "Single Push Panel" at this time following instructions on the back of the "Single Push Panel" page before continuing.

Now take a 23 x 23 cm piece of aluminum and draw the light pattern on it. Next, cut the exact diameter holes needed for mounting the lights on the panel. (Note: Make sure you leave enough room around the edges of the panel in order to mount on back of frame.) Now screw the light panel to the back of the push panel frame so the lights can be seen through the clear plexi-glass. Wire the lights so each panel hit produces a light change in your pre-determined pattern. If angle brackets are desired along with a base, they can be added. (See Single Push Panel.)

BARREL SWITCH

General Description:

This apparatus consists of one cardboard cylinder 12 cm long with a 7.6 cm inner and an 8.4 cm outer diameter. The cylinder is held into position by a 16d common nail pushed through a hole in each side section of the apparatus and into the wooden cylinder sides. The cylinder is constructed so a spin in either direction will result in a switch closure of a Radio Shack subminiature roller micro switch.

T.Z.A.S.P. Curriculum Goals:

Fine motor, sensory motor, receptive language (auditory), adaptive behavior, and cognitive.

T.Z.A.S.P. Behavioral Prerequisites:

A. A sweeping arm movement is required by this activity.

B. Child must have ability to bring hands to midline or behavior may be shaped toward this goal or device may be placed to one side.

Materials Needed:

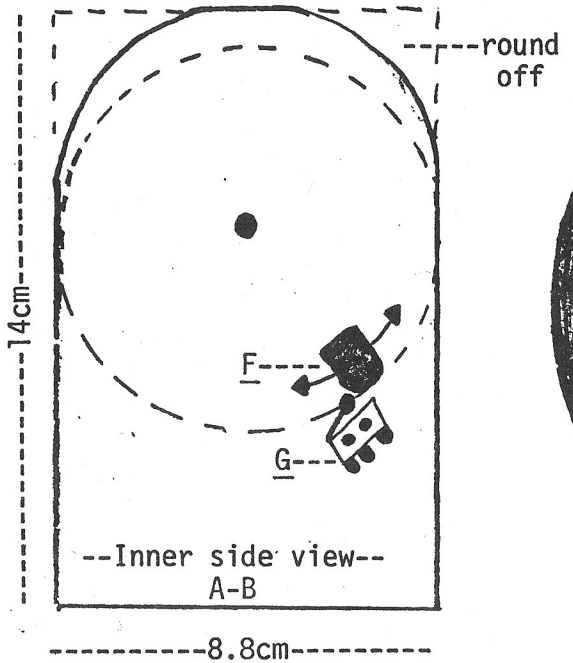
- 30.5 cm x 14 cm x 2.0 cm (thick) #2 pine
- 2/8.8 cm (wide) x 14 cm (long) x 2.0 cm (thick) #2 pine
- Cardboard cylinder - 18 cm (long), 7.6 cm "inner" diameter, 8.4 cm "outer" diameter
- Small amounts of other #2 pine
- 2/8.4 cm diameter 2 cm (thick) #2 pine circles
- Subminiature roller lever switch (SPDT)
- 2/16d common nails
- Small nails or brads
- 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- Wood glue

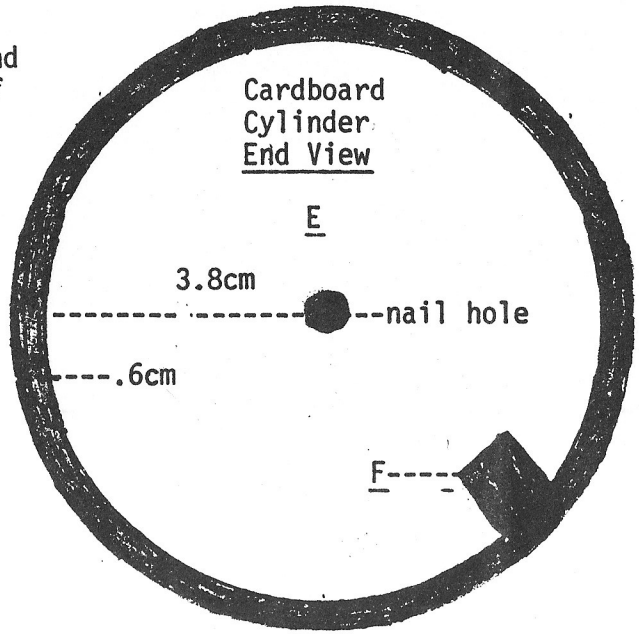
Approximate Price:

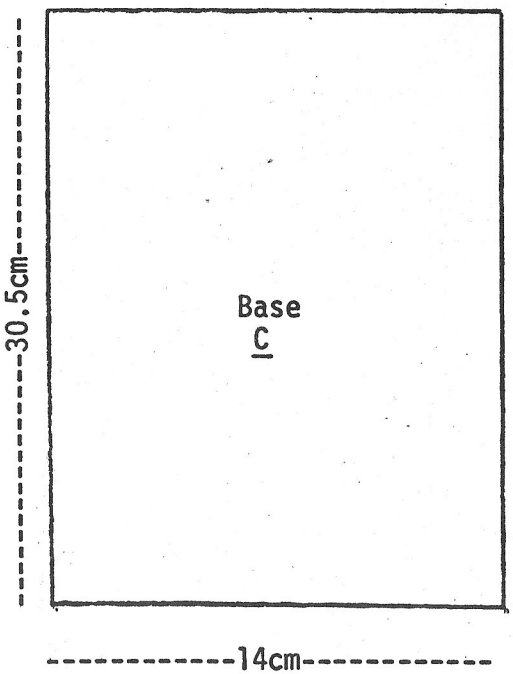
- Subminiature roller lever	-	$ 3.00
- Hardware and wire	-	3.00
- Two C-Clamps (Used to secure panel to table)	-	5.00
- Wood, cylinder and glue	-	5.00
	*Total:	$16.00

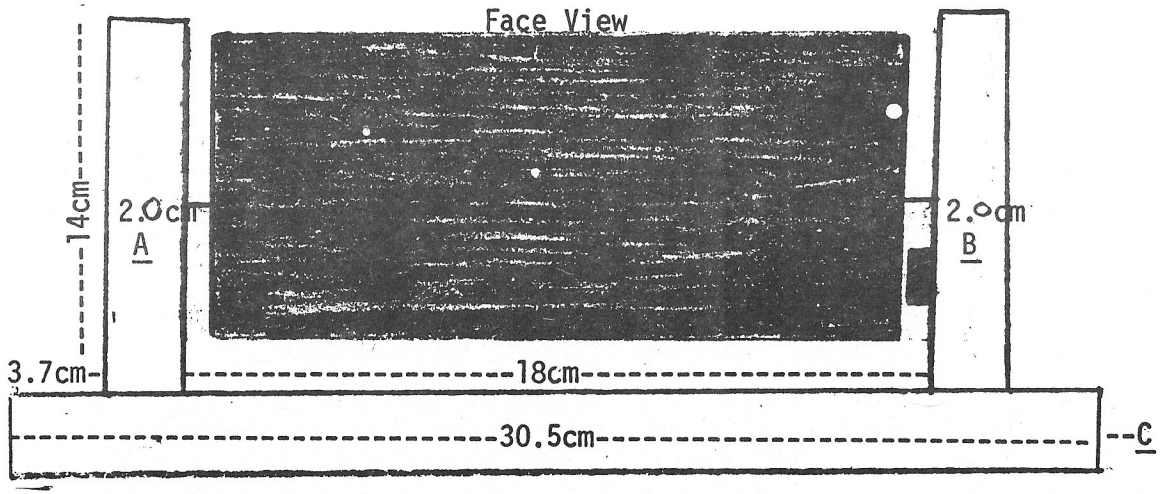
* Instructions for building a barrel switch are on the other side of this page.

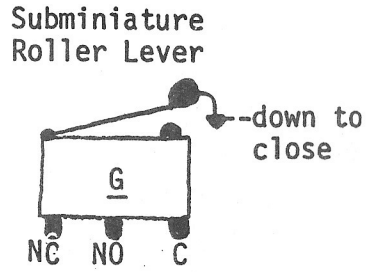
BARREL


14cm
round off
F
G
--Inner side view--
A-B
8.8cm


Cardboard
Cylinder
End View
E
3.8cm
nail hole
.6cm
F


30.5cm
Base
C
14cm


Face View
14cm
2.0cm
A
2.0cm
B
3.7cm
18cm
30.5cm
C


Subminiature
Roller Lever
down to close
G
NC
NO
C

DOUBLE BARREL SWITCH

General Description:

This apparatus consists of two cardboard cylinders 12 cm long with a 7.6 cm inner and an 8.4 cm outer diameter. The two cylinders are held into position by a 16d common nail pushed through a hole in each side section of the apparatus and into the wooden cylinder side. The two cylinders are constructed so a spin in either direction will result in a switch closure of a Radio Shack subminiature roller switch.

T.Z.A.S.P. Curriculum Goals:

Fine motor, sensory motor, receptive language (visual), receptive language (auditory), adaptive behavior, cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. A sweeping arm movement is required by this activity.

B. Child must have ability to bring hands to midline or behavior may be shaped toward this goal.

Materials Needed:

- 2/Cardboard Cylinders - 12 cm long, 7.6 cm "inner" diameter, 8.4 cm "outer" diameter
- 38 cm (long) x 14 cm (wide) x 2 cm (thick) #2 pine
- 4/14 cm long x 8.8 cm (wide) x 2 cm (thick) #2 pine
- 4/8.4 cm diameter x 2.0 cm (thick) #2 pine circles
- Small amounts of 2 cm (thick) #2 pine
- 2/Subminiature roller lever (SPDT)
- 4/16d common nails
- Small nails or brads
- 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- Wood glue

Approximate Price:

- 2/Subminiature roller lever	-	$ 6.00
- Hardware and wire	-	4.00
- 2/C-Clamps (Need to secure panel to table)	-	5.00
- Wood, cylinders, and glue	-	6.00
	*Total:	$21.00

*Instructions for building this double barrel are on the other side of this page.

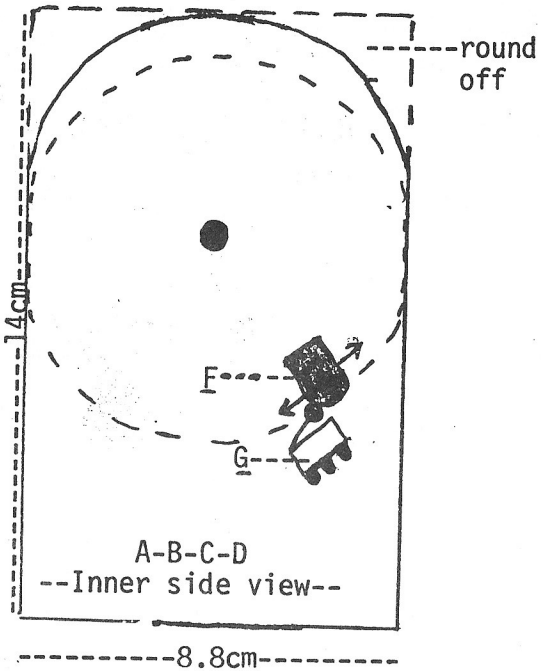
Instructions for Building the Double Barrel

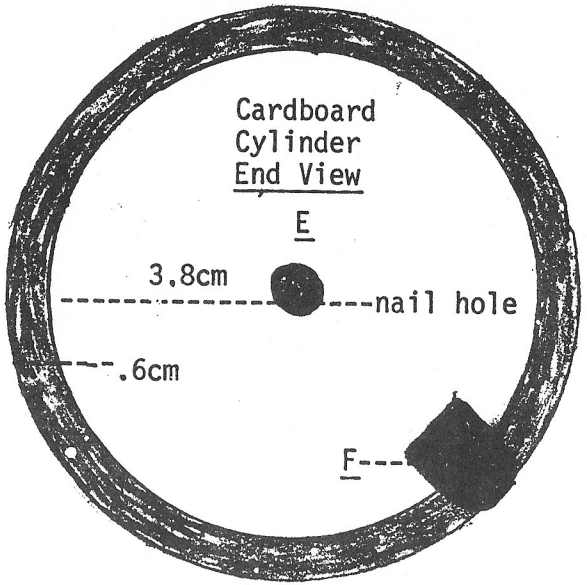
Pre-cut base "H" and sides "A-B-C-D" to pre-measured sizes. Now take the cylinder and cut out a wood circle for each of the two ends using the "inner" diameter measurement (7.6 cm). These cut-outs must fit perfectly inside the cylinder ends. (Note: "E" shows end view of cylinder.) Using your small nails or brads, attach the cut circles to the inner end of the cylinder sides. Next, drill a hole in the center of the cylinder sides so a 16d common nail can be inserted using some pressure, (see "E".) Now take the sides (A-B-C-D) and drill a hole in each so that a 16d common nail could be pushed through the hole and into the hole in the end section of the cylinder; making sure the top of the cylinder is approximately equal to the top of the side sections (see face view). The nail holes, drilled, should be in the center of the section and all at equal height. If not, the cylinder may not rotate correctly.

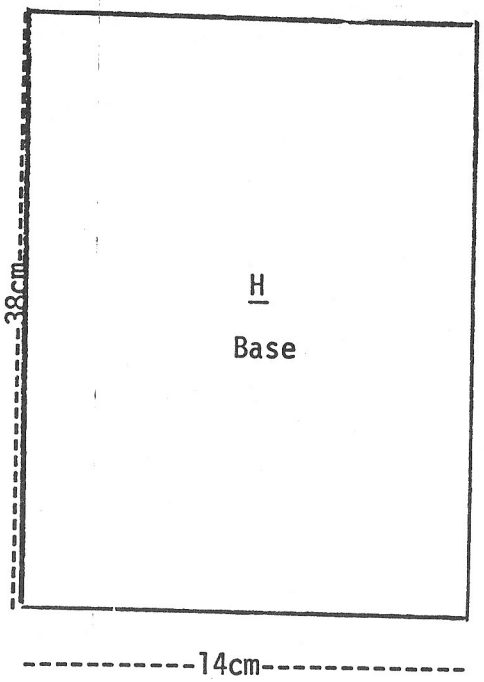
After the holes are made correctly, insert a 16d common nail in side sections "B" and "C", and screw these sections to base "H" as shown in the face view. Next, for switch closures, a small, thin piece of wood rounded off on one side must be glued to the cylinder end. (One per cylinder: see "F".) After that is done, take each cylinder section and attach to the side section "B" and "C" by pushing the nail already in side sections "B" and "C" into the center hole of the end section in each cylinder. Insert the other two nails in side sections "A" and "D" in each cylinder end as you did with "B" and "C", and attach the side sections to have "H". Make sure the cylinders can rotate freely leaving a little room between the cylinders and the side sections. A little adjustment may be required to free up one or both of the cylinders.

Lastly, nail or glue switch "G" into place so when the cylinder rotates, piece "F" will hit the roller on switch "G", press it down, and close it. (See side figure A-B-C-D.) Switch "G" must be placed exactly so the cylinder will close the switch in either direction rotated with very little friction.

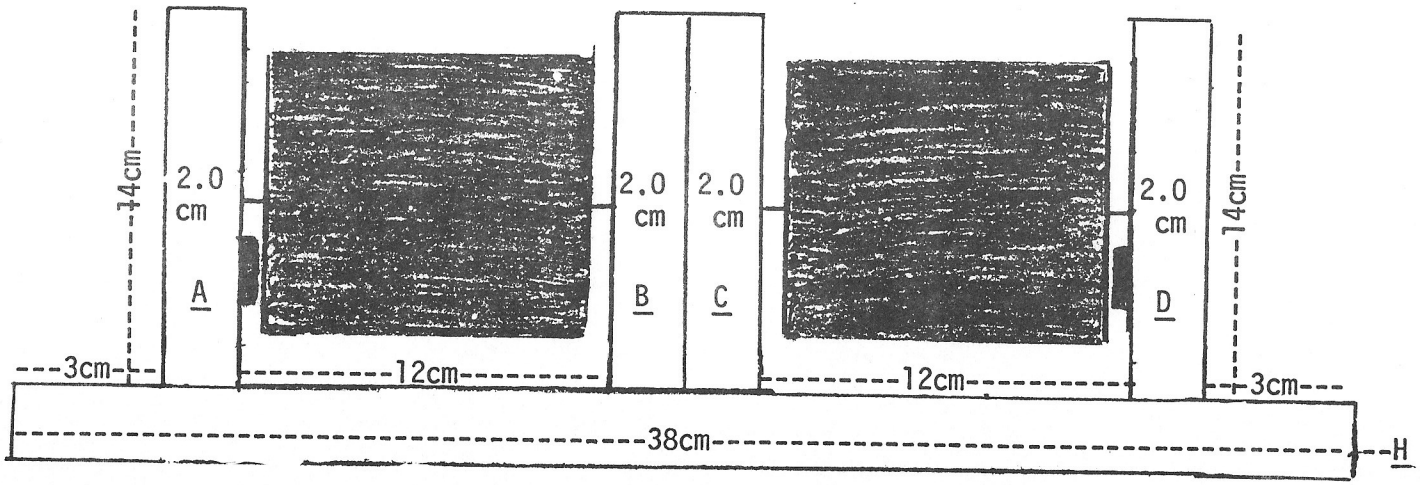
TWIN BARREL

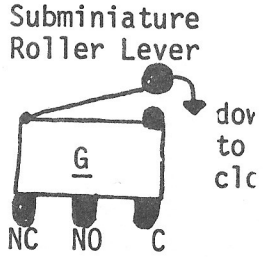






Face View





SINGLE KICK PANEL

General Description:

This apparatus consists of a hardboard panel attached to a 2x4 wooden frame. When the child kicks the panel, two BZ-2RW84 micro switches close.

T.Z.A.S.P. Curriculum Goals:

Gross motor, sensory motor, adaptive behavior, and cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. Reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

Materials Needed:

- 147.0 cm (long) x 9 cm (wide) x 3.5 cm (thick) wood
- 28.0 cm (long) x 2.0 cm (wide) x 3.5 cm (thick) wood
- 2/BZ-2RW84 micro switches
- Hardboard panel - 42.0 cm x 24.5 cm
- 2/Hinges
- Wood screws
- 20 AWG stranded two-conductor parallel cable
- Wood glue

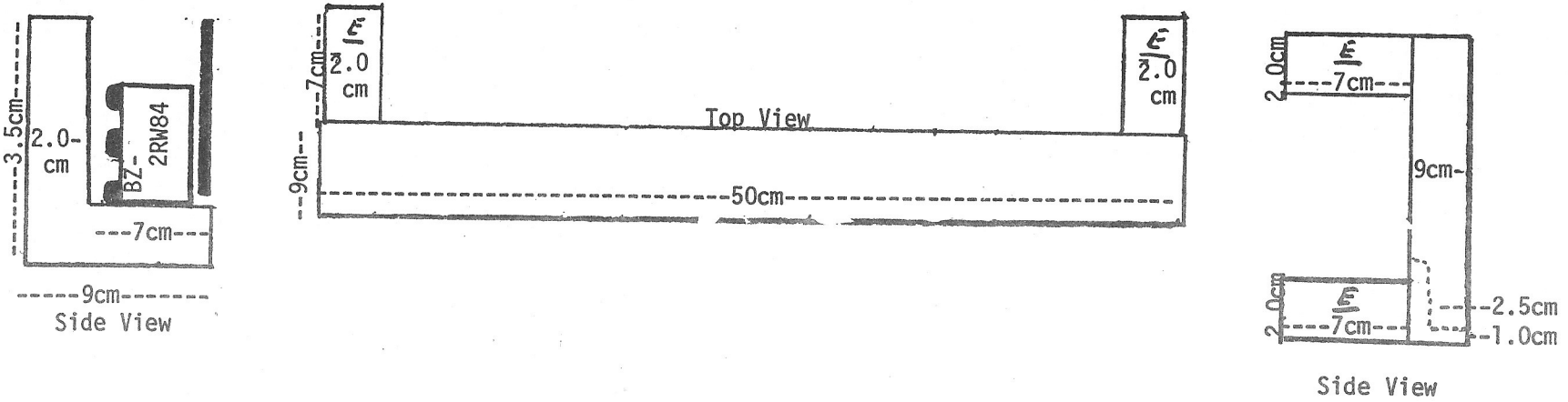
Approximate Price:

- 2/BZ-2RW84 micro switches	-	$ 9.00
- Hardware and wire	-	4.00
- Wood and glue	-	5.00
	*Total:	$18.00

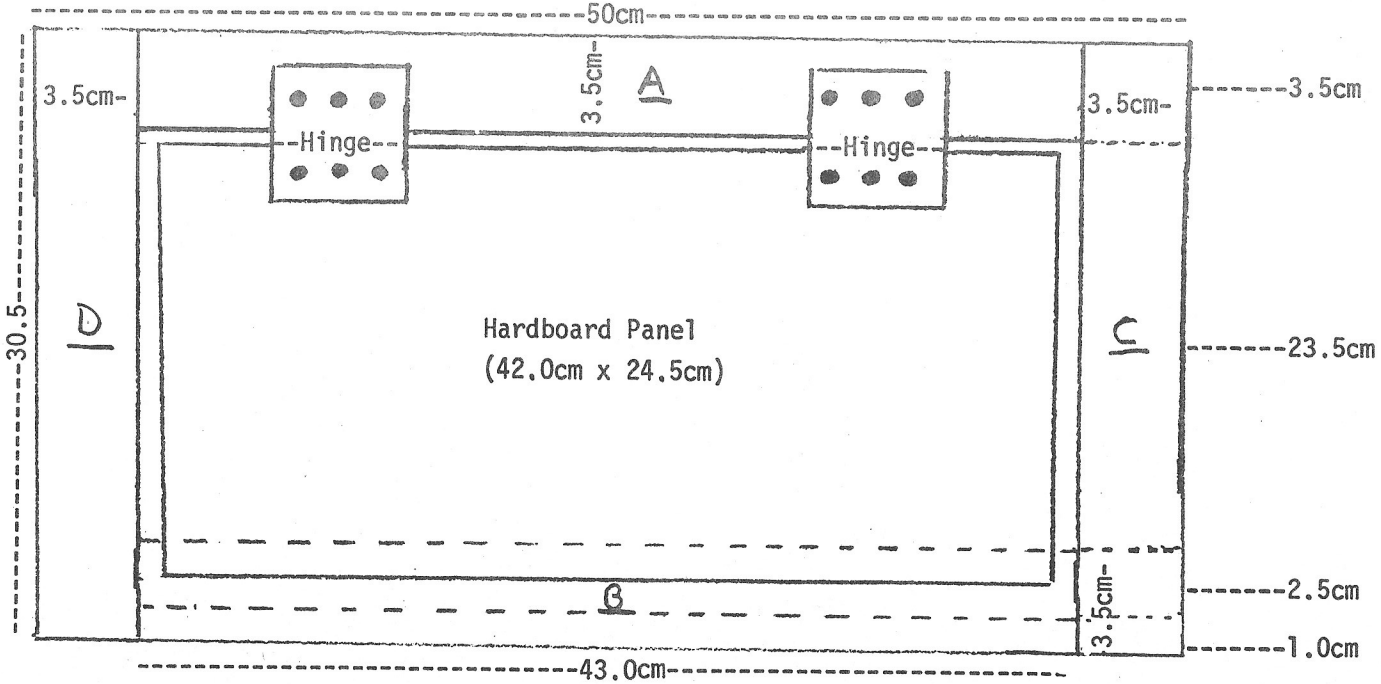
Instructions for Building the Single Kick Panel

Cut the frame sections to the desired sizes (A-B-C-D). Now take section "B" and follow the rabbiting procedure as shown by the side view diagram. The reason for rabbiting is to provide room for the micro switches. After that is done, screw and glue the sections together. Now take the hardboard panel and attach it to the top framing section (see face view) so when touched the panel will move freely. If the panel does not move a little angling of the apparatus may be necessary. Next, attach sections "E" to the four corners on the back side of the frame. It is necessary for the panel to be placed in a secure position to prevent moving while being kicked After the "E's" are attached, screw in the micro switches to each rabbited end of section "B", for switch closures. (Note: The lever on the switches can be bent for more or less sensitivity.)

Single Kick Panel



Face View



ALTERNATING KICK PANEL

General Description:

This apparatus consists of two kick panels attached to a 1.3 cm thick plywood panel. The two kick panels may be wired to provide a constant sequence of left-right or right-left switch closures. The center panel helps maintain the directional sequence so each foot operates one panel. Two BZ-2RW84 micro switches are used to activate the reinforcer.

T.Z.A.S.P. Curriculum Goals:

Gross motor, sensory motor, adatpvie behavior, and cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. Reinforced movement should be non-reflexive, through positioning of apparatus or child, if necessary.

B. Child should have volitional movement in both legs, possibly through positioning.

Materials Needed:

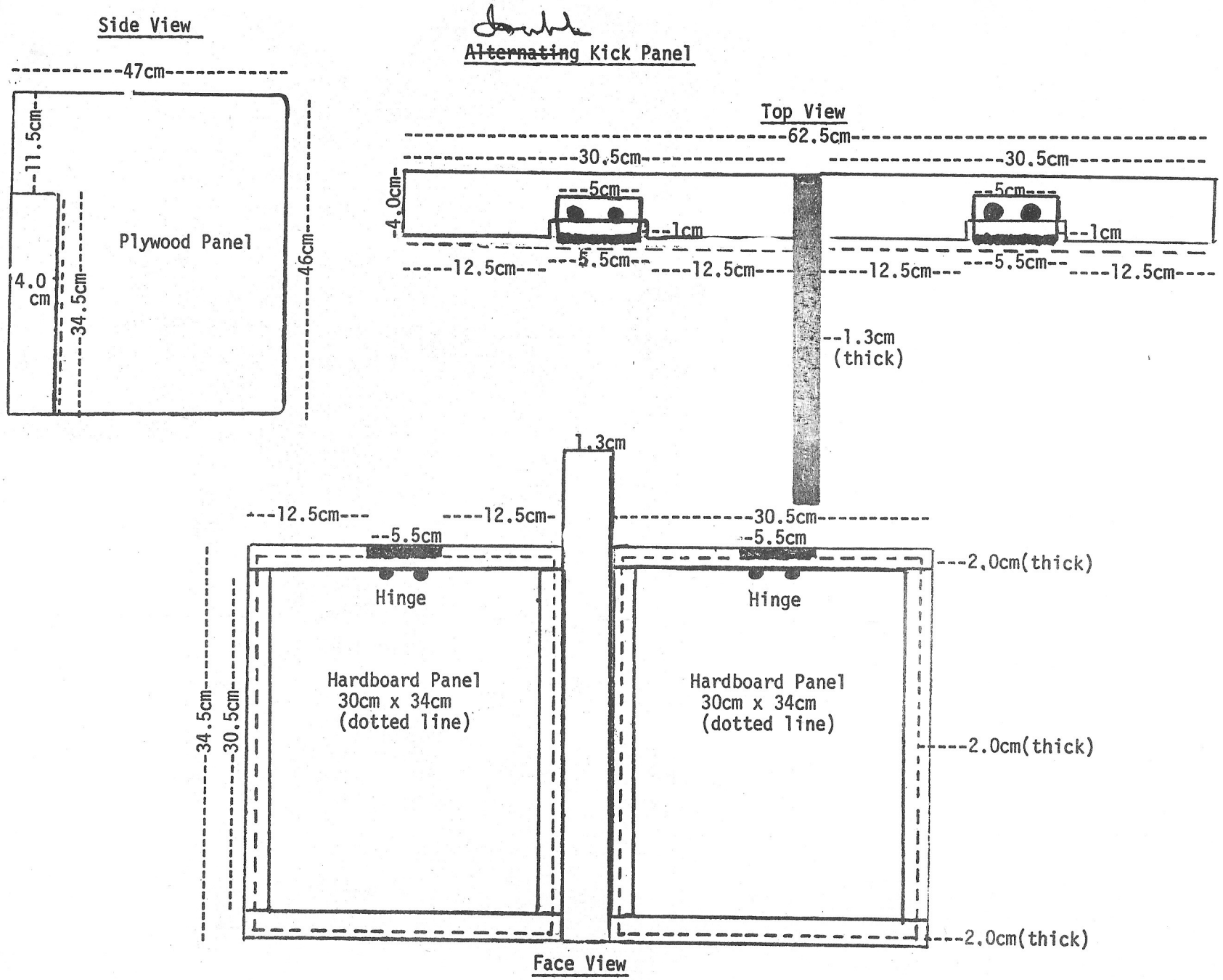
- 244.0 cm (long) x 4.0 cm (wide) x 2.0 cm (thick) #2 pine
- 47 cm x 46 cm x 1.3 cm (thick) plywyod panel
- 2/30 cm x 34 cm hardboard panel
- 2/5.5 cm hinges
- 2/BZ-2RW84 micro switches
- 1x6 and 1½x8 flathead wood screws
- 20 AWG stranded two-conductor parallel cable
- Wood glue

Approximate Price:

- 2/BZ-2RW84 micro switches	-	$ 9.00
- Hardware and wire	-	4.00
- Wood and glue	-	7.00
*Total:		$20.00

Instructions for Building the Alternating Kick Panel

Pre-cut all frame sections of the two kick panels as described in the schemitic. After that is done, groove out the top sections where the hinges will be placed for each panel. Next, attach the frame sections together so you have two separate kick panel frames. Now attach the hardboard panel to each frame as shown by using the hinges. After that is complete, attach one micro switch in the center of each bottom section of each panel. The micro switch should stay open as long as the kick panel is not touched. If this is not the case, adjustments such as bending the lever on the switch can be made. Lastly, attach the two separate panels to the center plywood panel which may be cut to fit individual children. (Note: A stepper relay is necessary to produce the directional kicking sequence (see section on wiring).


Side View
47cm
11.5cm
Plywood Panel
4.0 cm
34.5cm
46cm
~~Alternating~~ Kick Panel
Top View
62.5cm
30.5cm
30.5cm
4.0cm
5cm
1cm
5cm
1cm
12.5cm
5.5cm
12.5cm
12.5cm
5.5cm
12.5cm
1.3cm (thick)
1.3cm
12.5cm
12.5cm
30.5cm
5.5cm
5.5cm
2.0cm(thick)
Hinge
Hinge
Hardboard Panel 30cm x 34cm (dotted line)
Hardboard Panel 30cm x 34cm (dotted line)
34.5cm
30.5cm
2.0cm(thick)
2.0cm(thick)
Face View

GRASP SWITCH (TABLE MODEL)

General Description:

This apparatus consists of a strip of contraflex or ribbon switch attached to a wooden dowel and placed horizontally within reach of the child. Approximately eight ounces of pressure will cause a switch closure which, in turn, can be used to control another device.

T.Z.A.S.P. Curriculum Goals:

Fine motor, sensory motor, adaptive behavior, cognitive

T.Z.A.S.P. Behavioral Prerequisites:

A. Child's grasp should not be the result of reflex involvement. Reflexes may have to be inhibited through positioning.

Materials Needed:

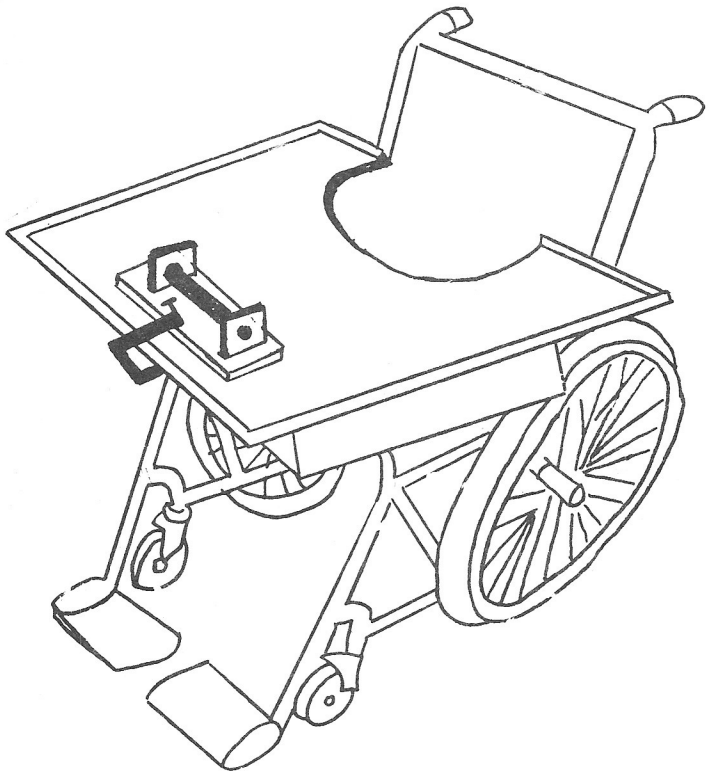
- 32 cm (long) x 18 cm (wide) x 2 cm (thick) #2 pine
- 11 cm x 11 cm x 2 cm (thick #2 pine)
- 27 cm (long) x 2.5 cm diameter dowel
- 25 cm length of contraflex
- 1½ x 8 wood screws and glue
- 20 AWG stranded two-conductor parallel cable

Approximate Price:

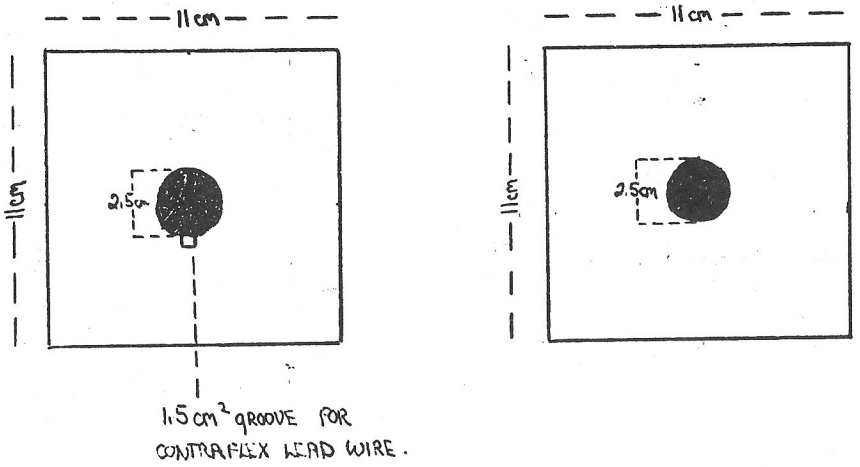
- 25 cm length of contraflex	- $ 10.00
- Hardware and wire	- 3.00
- 2/C-Clamps (to secure to table)	- 5.00
- Wood and glue	- 3.00
	$ 21.00

Directions

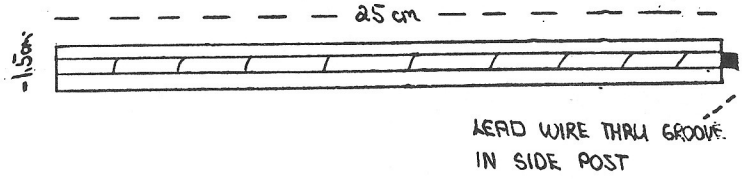
Cut the #2 pine to the pre-measured base sides. Next, cut the side posts (2). With the side posts cut, drill a 2.5 cm round hole into the center of the square side posts. This must be done for each side post. Now, a 1.5 cm groove for the contraflex lead wire must be made in one side post as described in the diagram. With that completed, screw the side posts onto their respective base positions. (See dashed lines in base diagram.) Next, the pre-cut dowel should be positioned through the side post center holes. Now you can wire the contraflex and other connections as described. See section on wiring.

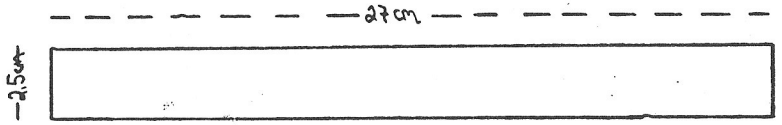
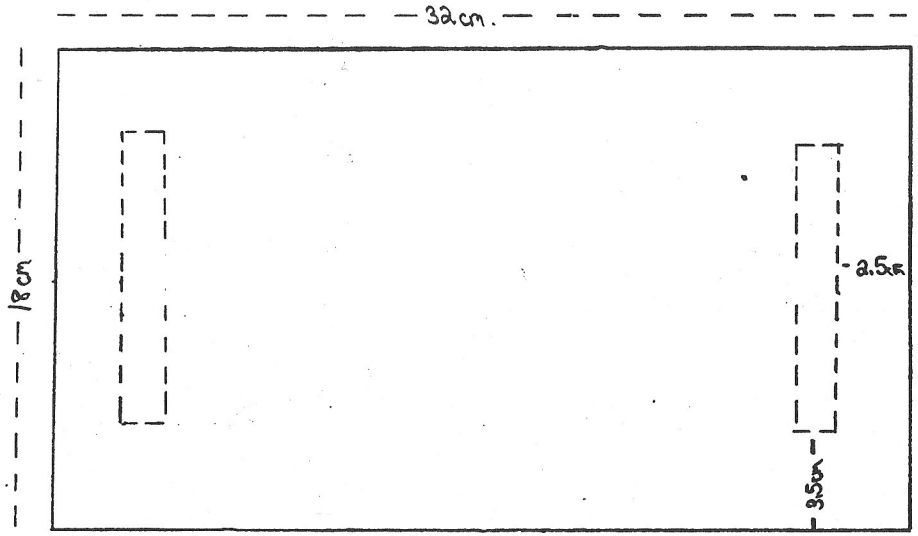


SIDE POSTS



CONTRAFLEX AND CENTER DOWEL





BASE (FACE VIEW)